

ORIGINAL ARTICLE

First record of the genus *Pantoclis* Förster, 1856 from China, with descriptions of two new species (Hymenoptera: Diapriidae)

Zi Hou, Shiwen Yang, Zaifu Xu*

Department of Entomology, South China Agricultural University, Guangzhou 510640, China

*Corresponding author, E-mail: xuzai@scau.edu.cn

Abstract The genus *Pantoclis* Förster, 1856 is firstly reported from China. Two new species from Yunnan Province are described: *P. sinica* sp. nov. and *P. longa* sp. nov. A key of this genus from the Oriental Region is also provided.

Key words Diapriidae, *Pantoclis*, new species, Oriental, China.

1 Introduction

Pantoclis Förster, 1856 belongs to the subfamily Belytinae of Diapriidae (Hymenoptera) and contains 109 valid species from all zoogeographical regions (Johnson *et al.*, 2015). In the Oriental Region, seven species have been reported: *P. javensis* Dodd, 1920 from Indonesia, *P. dalhousieana* Sharma, 1979, *P. kodaiensis* Sharma, 1980, *P. keralensis* Rajmohana & Narendran, 2006 and *P. sharmaski* Özdikmen, 2010 from India, *P. convexa* Buhl, 1998 and *P. fuscicarpa* Buhl, 1998 from the Philippines (Dodd, 1920; Sharma, 1979, 1980; Buhl, 1998; Rajmohana & Narendran, 2006). No species has been recorded from China. It is unknown for their ecology and biology.

During the survey of the Chinese fauna of Diapriidae in recent years, eighteen specimens of the genus *Pantoclis* were collected by yellow pan traps placed in Chinese prickly ash orchard in Yunnan Province. In 2014, we examined these specimens of *Pantoclis* and found two new species described in this paper.

2 Materials and methods

Specimens were examined and described under a Zeiss Stemi 2000-CS stereomicroscope. All photos were taken with a digital camera (Cool SNAP) attached to the stereomicroscope and processed by using Image-Pro Plus software.

Morphological terminology follows that of Masner & Garcia (2002) and Sharma (1979). Measurements reported are relative, except for the body length (head to abdominal tip, excluded the antennae and ovipositor) and fore wing length, measured in millimeters (mm). All the type specimens of the new species are deposited in the Hymenopteran Collection of South China Agricultural University, Guangzhou, Guangdong Province, China (SCAU).

The following abbreviations were used in the descriptions:

A1, A2, ...—the first, second, antennal segments, respectively;

OL—the distance between the inner edges of a lateral ocellus and the median ocellus;

OOL—the shortest distance between a lateral ocellus and compound eye;

urn:lsid:zoobank.org:pub:CBA15108-2D5F-484B-92CD-6EBD412A91FD

Received 12 January 2016, accepted 30 June 2016

Executive editor: Fuqiang Chen

POL—the shortest distance between inner margins of two posterior ocelli;
syntergite—the second tergite.

3 Taxonomy

Genus *Pantoclis* Förster, 1856 New record to China

Pantoclis Förster, 1856: 129; Provancher, 1888: 405; Ashmead, 1893: 346; Kieffer, 1907: 30; Kieffer, 1908: 365; Kieffer, 1909: 352; Kieffer, 1910a: 6; Kieffer 1913: 27; Kieffer, 1916: 352; Muesebeck & Walkley, 1956: 378; Nixon, 1957: 41; Hellén, 1964: 8; Muesebeck & Masner, in Krombein & Burks, 1967: 294; Wall, 1967: 136; Kozlov, 1978: 572; Muesebeck, 1979: 1133; Mani & Sharma, 1982: 223; Johnson, 1992: 88; Kozlov, 1995: 51; Buhl, 1998: 52; Rajmohana, 2006: 21. Type species: *Pantoclis barycera* Förster, 1861.

Zelotypa Förster, 1856: 130; Ashmead, 1893: 346; Kieffer, 1907: 26; Kieffer, 1908: 364; Kieffer, 1910b: 597; Muesebeck & Walkley, 1956: 409. Type species: *Zelotypa coloradensis* Ashmead, 1890 (synonymized by Masner, in Krombein & Burks, 1967).

Diagnosis. Body brown to black. Antenna formula 15–14. A3 longer than A4. Male usually with A3 modified. Mandibles bidentate, not forming a beak. Malar sulcus absent. Notauli complete. Scutellum with a large scutellar pit at base, without a row of foveae at its posterior margin. Propodeum with a simple longitudinal keel. Fore wing with radial cell closed, cubital vein straight or absent. Petiole short, no more than 1.5 times as long as middle wide. Syntergite usually with a median furrow and some lateral furrows.

Biology. Unknown.

Distribution. All zoogeographical regions (Förster, 1856; Nixon, 1957; Johnson, 1992; Buhl, 1998).

Key to the Oriental species of the genus *Pantoclis* Förster.

1. Female.....2
Male.....4
2. A3 longer than A1.....*P. keralensis* Rajmohana & Narendran
A3 shorter than A1.....3
3. Antennae wholly blackish-brown; mesosoma and metasoma black; propodeum with only one lateral keel on each side of median longitudinal keel.....*P. dalhousieana* Sharma
Antennae blackish-brown, with A1–A3 reddish-yellow; mesosoma and metasoma chestnut; propodeum with three lateral keels on each side of median longitudinal keel.....*P. javensis* Dodd
4. A3 slightly or distinctly excavated in anterior part.....5
A3 normal, not modification.....8
5. A3 slightly excavated.....6
A3 distinctly excavated.....7
6. Scutellum distinctly convex.....*P. convexa* Buhl
Scutellum normal, not distinctly convex.....*P. javensis* Dodd
7. Antennae brown, with A1–A3 yellowish-brown; anterior scutellar pit subtriangular; radial cell 1.33 times as long as marginal vein..
.....*P. sinica* sp. nov.
Antennae wholly brown; anterior scutellar pit elliptical; radial cell 3.71 times as long as marginal vein.....*P. longa* sp. nov.
8. Syntergite without median furrow, with striations at base.....*P. kodaiensis* Sharma
Syntergite with median furrow, without striations at base.....9
9. A3 shorter than A1; syntergite with only one median furrow, without lateral furrows.....*P. sharmaski* Özdikmen
A3 as long as A1; syntergite with both median furrow and lateral furrows.....*P. fuscicorpa* Buhl

Pantoclis sinica sp. nov. (Figs 1–3)

Description. Male. Holotype. Body length 2.7 mm. Fore wing length 2.4 mm.

Colour. Body blackish-brown. Antennae brown, with A1–A3 yellowish-brown. Legs brown. Wings hyaline, with veins brown.

Head. Head smooth and shiny, 1.38 times as wide as long (36:26) in dorsal view. Clypeus moderately convex. Tentorial pits distinct. Mandibles bidentate, not forming a beak. Malar sulcus absent. Antennifer indistinctly separated. Antennae inserted on a frontal prominence, sockets opening upward. Antenna 14 segmented. Relative proportions of length to width of antennal segments as follows: A1 (17:4.5), A2 (5:4), A3 (14:4), A4 (12:3.5), A5 (11:3.5), A6 (10:3.5),

A7 (9:3.5), A8 (8.5:3), A9 (8.5:3), A10 (8:3), A11 (8:3), A12 (8:3), A13 (7:2.5), A14 (12:2.5). A1 obviously shorter than head height (17:36), longer than A3 (17:14). A3 distinctly excavated in anterior 0.36. A4 not modified. A13 about 2.70 times as long as wide. Eye 1.31 times as long as wide (17:13), 1.89 times as long as malar space (17:9). Ocelli arranged in isosceles triangle on vertex. POL:OOL:OL = 4:5:3. Occipital carina complete.

Mesosoma. Mesosoma smooth and shiny; 1.37 times as long as wide (52:38), and slightly wider than head (38:36) in dorsal view. Notauli complete and posteriorly convergent. Anterior scutellar pit subtriangular, as wide as distance between notauli behind. Scutellum without a row of foveae at posterior margin. Mesopleuron hairless. Sternaulus present. Metanotum with a short keel. Dorsal surface of propodeum with a simple longitudinal keel. Wings fully developed. Fore wing hyaline, exceeding apex of gaster. Fore wing with distinct costal vein, subcostal vein, marginal vein, stigmal vein, basal vein, postmarginal vein. Marginal vein 0.60 times as long as its distance from basal vein (9:15), 1.50 times as long as stigmal vein (9:6). Costal cell, basal cell and radial cell closed. Radial cell 1.33 times as long as marginal vein (12:9). Cubital vein and medial vein indistinct. Hind wing with closed basal cell. Tibial spur formula 1:2:2.

Metasoma. Petiole cylindrical, 1.45 times as long as wide (16:11), with longitudinal carinae. Gaster smooth and shiny. Syntergite enlarged, cover 0.77 length of gaster (51:66), 1.42 times as long as wide (51:36) in dorsal view, at base with a median furrow 0.73 times as long as petiole (11:15), 0.22 times as long as length of syntergite (11:51), on each side with two short lateral furrows.



Figures 1–3. *Pantoclis sinica*, **sp. nov.**, holotype, male. 1. Antenna. 2. Head, mesosoma and metasoma in dorsal view. 3. Fore wing.

Female. Unknown.

Material examined. Holotype ♂, China, Yunnan, Zhaotong, Yongshan, Huanghua, VIII–X.2012, coll. Shiwen Yang. Paratype. China, Yunnan, Zhaotong, Yongshan, Huanghua, 1♂, VIII–X.2012, coll. Shiwen Yang.

Biology. Unknown.

Distribution. China (Yunnan).

Remarks. This species is similar to *P. kodaiensis* Sharma, 1980 from India, but can be separated from the latter mainly by A3 being distinctly excavated at its basal 0.36 (without modification in *P. kodaiensis*); radial cell 1.33 times as long as marginal vein (2.50 times in *P. kodaiensis*); postmarginal vein as long as radial cell (1.90 times in *P. kodaiensis*); syntergite with a median furrow 0.73 times as long as petiole, on each side with two short furrows (without median furrow, but with short striations on anterior margin in *P. kodaiensis*).

Etymology. This new species is named after the type locality, China.

***Pantoclis longa* sp. nov.** (Figs 4–6)

Description. Male. Holotype. Body length 2.8 mm. Fore wing length 2.6 mm.

Colour. Body black. Antennae brown. Leg brown, with coxae blackish-brown at base. Wings hyaline, with veins



Figures 4–6. *Pantoclis longa*, **sp. nov.**, holotype, male. 4. Antenna. 5. Mesosoma and metasoma in dorsal view. 6. Fore wing.

brown.

Head. Head smooth and shiny, 1.38 times as wide as long (36:26) in dorsal view. Clypeus moderately convex. Tentorial pits distinct. Mandibles bidentate, not forming a beak. Malar sulcus absent. Antennifer indistinctly separated. Antennae inserted on a frontal prominence, sockets opening upward. Antenna 14 segmented. Relative proportions of length to width of antennal segments as follows: A1 (18:4.5), A2 (5:4), A3 (16:4), A4 (13:4), A5 (13:3.5), A6 (12:3.5), A7 (11:3), A8 (11:3), A9 (10.5:3), A10 (10:3), A11 (9.5:3), A12 (9:3), A13 (9:3), A14 (13:2.5). A1 obviously shorter than head height (18:38), longer than A3 (18:16). A3 distinctly excavated in anterior 0.33. A4 no modified. A13 3.0 times as long as wide. Eye 1.50 times as long as wide (18:12), 1.38 times as long as malar space (18:13). Ocelli arranged in isosceles triangle on vertex. POL:OOL:OL = 4:6:3. Occipital carina complete.

Mesosoma. Mesosoma smooth and shiny; 1.56 times as long as wide (56:36), and as wide as head (36:36) in dorsal view. Notauli complete and posteriorly convergent. Anterior scutellar pit elliptical, 1.32 times as wide as distance between notauli behind. Scutellum without a row of foveae at posterior margin. Mesopleuron medially hairless. Sternaulus present. Metanotum without short keel. Dorsal surface of propodeum with a simple longitudinal keel. Wings fully developed. Fore wing hyaline, exceeding apex of gaster. Fore wing with distinct costal vein, subcostal vein, marginal vein, stigmal vein, basal vein, postmarginal vein. Marginal vein 0.43 times as long as its distance from basal vein (6:14), as long as stigmal vein (7:7). Costal cell, basal cell and radial cell closed. Radial cell 3.71 times as long as marginal vein (26:7). Cubital vein and medial vein indistinct. Hind wing with closed basal cell. Tibial spur formula 1:2:2.

Metasoma. Petiole cylindrical, 1.14 times as long as wide (16:14), with longitudinal carinae. Gaster smooth and shiny. Syntergite enlarged, cover 0.76 length of gaster (53:70), 1.51 times as long as wide (53:35) in dorsal view, at base with a median furrow 0.75 times as long as petiole (12:16), 0.23 times as long as length of syntergite (12:53), on each side with two short lateral furrows.

Female. Unknown.

Material examined. Holotype ♂, China, Yunnan, Zhaotong, Yongshan, Huanghua, VIII–X.2012, coll. Shiwen Yang. Paratypes. China, Yunnan, Zhaotong, Yongshan, Huanghua, 15♂, VIII–X.2012, coll. Shiwen Yang.

Biology. Unknown.

Distribution. China (Yunnan).

Remarks. This species is similar to *P. convexa* Buhl, 1998 from the Phillipines, but can be separated from the latter mainly by scutellum normal (distinctly convex in *P. convexa*); A3 shorter than A1 (A3 longer than A1 in *P. convexa*); radial cell 3.71 times as long as marginal vein (3.33 times in *P. convexa*).

Etymology. The new species name is referred to the long radial cell.

Funding This study was partly supported by the National Natural Science Foundation of China (31272351, U0936601).

Acknowledgements We are very grateful to Dr. Lubomír Masner of Canadian National Collection of Insects, for his kind help during the study of Diapriidae from China.

References

- Ashmead, W.H. 1890. On the Hymenoptera of Colorado. *Bulletin of the Colorado Biological Association*, 1: 1–47.
- Ashmead, W.H. 1893. A monograph of the North American Proctotrypidae. *Bulletin of the United States National Museum*, 45: 1–472.
- Buhl, P.N. 1998. New or little known Oriental and Australasian Belytinae (Hymenoptera: Diapriidae). *Oriental Insects*, 32: 41–58.
- Dodd, A.P. 1920. Notes on the exotic Proctotrupeoidea in the British and Oxford University Museums, with descriptions of new genera and species. *Transactions of Entomological Society of London*, 67: 321–382.
- Förster, A. 1856. Hymenopterologische Studien. II. Heft. Chalcidae und Proctotrupii. Ernst ter Meer, Aachen. 152pp.
- Hellén, W. 1964. Die Diapriinen Finnlands (Hymenoptera: Proctotrupeoidea). *Fauna Fennica*, 18: 1–68.
- Johnson, N.F. 1992. Catalog of world Proctotrupeoidea excluding Platygasteridae. *Memoirs of the American Entomological Institute*, 51: 1–825.
- Johnson, N.F., Musetti, L., Cora, J. 2015. Hymenoptera Online (HOL), Database. Available from <http://hol.osu.edu/> (accessed 2 May 2015).
- Kieffer, J.J. 1907. Description de nouveaux Belytides de la faune palearctique. *Brotéria*, 6: 5–42.
- Kieffer, J.J. 1908. Proctotrypidae. In: André, E. (ed.). *Species des Hyménoptères d'Europe et d'Algérie. Vol. 10*. Hermann et Fils, Paris. pp. 289–448.

- Kieffer, J.J. 1909. Description de nouveaux dryinides et belytides d'Amerique. *Annales de la Société Scientifique de Bruxelles*, 33: 334–380.
- Kieffer, J.J. 1910a. Hymenoptera. Family Belytidae. *Genera Insectorum*, 107: 1–47.
- Kieffer, J.J. 1910b. Proctotrypidae, In: André, E. (ed.). *Species des Hyménoptères d'Europe et d'Algérie. Vol. 10*. Hermann et Fils, Paris. pp. 593–752.
- Kieffer, J.J. 1913. Proctotrupidae, Cynipidae et Evaniidae. Voyage de Ch. Alluaud et R. Jeannel en Afrique Orientale (1911–1912). Résultats scientifiques. *Hyménoptères*, 1: 1–35.
- Kieffer, J.J. 1916. Hymenoptera, Proctotrupeoidea, Diapriidae. *Das Tierreich* 44. R. Friedländer und Sohn, Berlin. 627 pp.
- Kozlov, M.A. 1978. Superfamily Proctotrupeoidea. *Determination of insects of the European portion of the USSR. Vol. 3, part 2*. Nauka, Leningrad. 758 pp.
- Kozlov, M.A. 1995. 24. Family Diapriidae. In: Lehr, P.A. (ed.). Key to Insects of Russian Far East, Vol. 4. Neuropteroidea, Mecoptera, Hymenoptera. Part 2. Hymenoptera. Dal'nauka, Vladivostok. pp. 45–57.
- Krombein, K.V., Burks, B.D. 1967. *Hymenoptera of America north of Mexico. Synoptic Catalog (Agriculture Monograph No. 2). Second supplement*. United States Government Printing Office, Washington. 584 pp.
- Mani, M.S., Sharma, S.K. 1982. Proctotrupeoidea (Hymenoptera) from India. A review. *Oriental Insects*, 16: 135–258.
- Masner, L., Gacia, J.L. 2002. The genera of Diapriinae (Hymenoptera: Diapriidae) in the New World. *Bulletin of American Museum of Natural History*, 268: 1–138.
- Muesebeck, C.F.W. 1979. Superfamily Proctotrupeoidea. In: Krombein, K.V., Hurd, P.D., Smith, D.R., Burks, B.D. (eds.). *Catalog of Hymenoptera in America north of Mexico. Volume 1. Symphyta and Apocrita (Parasitica)*. Smithsonian Institution Press, Washington, DC. pp. 1121–1186.
- Muesebeck, C.F.W., Masner, L. 1967. Superfamily Proctotrupeoidea. In: Krombein, K.V., Burks, B.D. (eds.). *Hymenoptera of America north of Mexico. Synoptic Catalog (Agriculture Monograph No. 2). Second supplement*. United States Government Printing Office, Washington. pp. 285–304.
- Muesebeck, C.F.W., Walkley, L.M. 1956. Type species of the genera and subgenera of parasitic wasps comprising the superfamily Proctotrupeoidea (Order Hymenoptera). *Proceedings of the U.S. National Museum*, 105: 319–419.
- Nixon, G.E.J. 1957. Diapriidae, subfamily Belytinae (Hymenoptera, Proctotrupeoidea). *Handbooks for the Identification of British Insects*, 8: 1–107.
- Özdikmen, H. 2010. New names for some preoccupied specific epithets in the superfamily Diaprioidea (Hymenoptera). *Munis Entomology & Zoology*, 5 (2): 745–752.
- Provancher, L. 1888. Additions et corrections au volume II de la faune entomologique du Canada. Traitant des hyménoptères. *Faune Hyménoptérologique de la Province de Québec*, 52: 400–407.
- Rajmohana, K. 2006. Studies on Proctotrupeoidea and Platygastroidea (Hymenoptera: Insecta) of Kerala. *Memoirs of the Zoological Survey of India*, 21 (1): 1–153.
- Sharma, S.K. 1979. Studies on the Indian Diapriidae (Hymenoptera: Proctotrupeoidea). *Memoirs of the School of Entomology, St. John's College*, 7: 1–88.
- Sharma, S.K. 1980. On some new species of Belytinae and Diapriinae (Hymenoptera: Proctotrupeoidea) from India. *Oriental Insects*, 14 (1): 51–61.
- Wall, I. 1967. Die Ismarinae und Belytinae der Schweiz. *Entomology Abhandlungen Staatliches Museum für Tierkunde Dresden*, 35: 123–265.